

CLAIMS:

1. A method of making a shaped article, comprising:

thermoforming an article comprising an exterior surface comprising an inorganic biocidal agent and a first thermoplastic resin to form the shaped article, wherein the shaped article has improved biocidal activity compared to the unshaped article.

2. The method of Claim 1, wherein the first thermoplastic resin comprises a homopolymer or a copolymer of a polycarbonate, a polyester, a polyacrylate, a polyamide, a polyetherimide, polyphenylene ether, or a combination comprising one or more of the foregoing resins.

3. The method of Claim 1, wherein the shaped article has biocidal activity effective to kill at least 50% of a pathogenic organism in contact with the exterior surface over a period of 24 hours at 25°C.

4. The method of Claim 1, wherein the article has a biocidal metal release factor of greater than 2.5 from an exterior surface

wherein biocidal metal release in parts per billion is measured by contacting 5 cm by 5 cm of the exterior surface with 40 milliliters of 0.8% weight/volume of sodium nitrate for 24 hours at 25° C to form a test solution, and measuring an amount of biocidal metal in the test solution in parts per billion, and

wherein the biocidal metal release factor is the amount of biocidal metal in the test solution in parts per billion divided by a product of a weight percent of the inorganic biocidal agent based on the total weight of the article and the weight percent of biocidal metal in the inorganic biocidal agent.

5. The method of Claim 4, wherein the biocidal metal release factor is greater than or equal to about 3.

6. The method of Claim 4, wherein the biocidal metal release factor is greater than or equal to about 4.

7. The method of Claim 1, wherein the exterior surface is in the form of a layer disposed on at least a portion of the article.

8. The method of Claim 7, wherein at least a portion of the shaped article comprises a second thermoplastic resin that is the same as or different than the first thermoplastic resin.

9. The method of Claim 8, wherein at least a portion of the article comprises an inorganic biocidal agent that is the same as or different than the inorganic biocidal agent in the exterior surface.

10. The method of Claim 3, wherein the biocidal activity is an anti-microbial efficacy that is greater than or equal to about 70% killing of an E. coli culture or a Staphlococcus aureus culture, measured by contacting the exterior textured surface of the article with the E. coli culture or the Staphlococcus aureus culture, incubating the article for 24 hours at 37°C, and determining the percentage of killing of the E. coli culture or the Staphlococcus aureus culture.

11. The method of Claim 10, wherein the anti-microbial efficacy of the shaped article is greater than or equal to about 95%.

12. The method of Claim 1, wherein the inorganic biocidal agent comprises a biocidal metal comprising silver, gold, copper, zinc, mercury, tin, lead, bismuth, cadmium, chromium, thallium, or a combination comprising one or more of the foregoing biocidal metals.

13. The method of Claim 12, wherein the inorganic biocidal agent is in the form of a metal salt, a hydroxyapatite, a zirconium phosphate, or a zeolite comprising at least one of the biocidal metals, or a combination comprising one or more of the foregoing forms.

14. The method of Claim 13, wherein the inorganic biocidal agent is a biocidal zeolite.

15. The method of Claim 14, wherein the biocidal zeolite comprises silver.

16. The method of Claim 2, wherein the first thermoplastic resin comprises a polycarbonate resin.

17. The method of Claim 1, wherein the inorganic biocidal agent is present at a concentration of about 0.1 wt% to about 20 wt% based on the total weight of the exterior surface.

18. The method of Claim 6, wherein the exterior surface layer has a thickness of about 5 micrometers to about 50 micrometers.

19. The method of Claim 1, wherein the shaped article reduces the growth of a pathogenic organism comprising *Bacillus cereus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Streptococcus faecalis*, *Salmonella gallinarum*, *Vibrio parahaemolyticus*, *Candida albicans*, *Streptococcus mutans*, *Legionella pneumophila*, *Fuso bacterium*, *Aspergillus niger*, *Aureobasidium pullulans*, *Cheatomium globosum*, *Gliocladium virens*, *Pencillum funiculosum*, *Saccharomyces cerevisiae*, a *Herpes simplex* virus, a polio virus, a hepatitis B virus, a hepatitis C virus, an influenza virus, a sendai virus, a sindbis virus, a vaccinia virus, a severe acute respiratory syndrome virus, or a combination comprising one or more of the foregoing organisms.

20. The product of the process of Claim 1.